**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Previously presented) A method of transmitting over four transmit antennas comprising:

for each antenna, generating a respective sequence of OFDM symbols, each OFDM symbol having a plurality of sub-carriers carrying data or pilots, and transmitting the sequence of OFDM symbols;

wherein pilots are inserted for the four antennas collectively in blocks of two sub-carriers by two OFDM symbols scattered in time and frequency.

2. (Original) The method of claim 1 wherein pilots are inserted for the four antennas collectively in blocks of two sub-carriers by two OFDM symbols scattered in time and frequency by:

inserting such blocks of two sub-carriers by two OFDM symbols scattered in a first regularly spaced pattern in even pairs of OFDM symbols;

inserting such blocks of two sub-carriers by two OFDM symbols scattered in a second regularly spaced pattern offset from said first regularly spaced pattern in odd pairs of OFDM symbols.

3. (Cancelled)

4. (Original) The method of claim 1 wherein each block of two sub-carriers by two OFDM symbols comprises a single pilot for each of the four antennas in a respective position within the block.

5. (Original) The method of claim 4 wherein the single pilot for each of the four antennas takes the same position in every block of two sub-carriers by two OFDM symbols.

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Withdrawn) A method of transmitting over four transmit antennas comprising:

for each antenna, generating a respective sequence of OFDM symbols, each OFDM symbol having a plurality of sub-carriers carrying data or pilots, and transmitting the sequence of OFDM symbols;

wherein for a first pair of the four antennas, pairs of pilots are inserted scattered in time and frequency;

wherein for a second pair of the four antennas, pairs of pilots are inserted scattered in time and frequency in locations different from pilots for the first pair of antennas.

12. (Withdrawn) The method of claim 11 wherein for each pair of two pilots, the two pilots are not consecutive in time or frequency.

13. Withdrawn) The method of claim 11 wherein for each pair of two pilots, the two pilots are arranged consecutively in time.

14. (Cancelled)

15. (Withdrawn) A method of transmitting over four transmit antennas comprising:

for each antenna, generating a respective sequence of OFDM symbols, each OFDM symbol having a plurality of sub-carriers carrying data or pilots, and transmitting the sequence of OFDM symbols;

wherein pilots are arranged in groups of four consecutive pilots in time, each group of four consecutive pilots containing pilots for the four antennas.

16. (Withdrawn) The method of claim 15 wherein such groups of four consecutive pilots are inserted in each set of four consecutive OFDM symbols, and in each of a plurality of spaced sub-carriers.

17. (Cancelled)

18. (Withdrawn) The method of claim 15 wherein each group of four consecutive pilots comprises a single pilot for each of the four antennas.

19. (Withdrawn) The method of claim 18 wherein the location of the single pilot for each antenna varies across groups of four consecutive pilots.

20. (Previously presented) The method of claim 1 further comprising:

using different pilot patterns for respective four antenna transmitters to reduce interference between pilots of different four antenna transmitters.

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Previously presented) The method of claim 1 further comprising transmitting at least one fixed pilot for each of at least one of the four antennas.

25. (Previously presented) The method of claim 1 further comprising transmitting at least one fixed pilot for each of two pairs of antennas within said four antennas.

26. (Previously presented) The method of 1 further comprising transmitting at least one fixed signalling channel for each of two pairs of antennas within said four antennas.

27. (Withdrawn) The method of claim 15 further comprising:

transmitting relatively reliable signalling channel information proximal in time and frequency to locations of pilots.

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)

39. (Cancelled)

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

43. (Cancelled)

44. (Cancelled)

45. (Cancelled)

46. (Previously presented) A transmitter comprising four transmit antennas, the transmitter being adapted to implement the method of claim 1.

47. (Previously presented) At least two base station transceivers collectively comprising four transmit antennas, the at least two base station transceivers adapted to implement the method of claim 1.

48. (Cancelled)

49. (Withdrawn) A transmitter comprising four transmit antennas, the transmitter being adapted to implement the method of claim 11.

50. (Withdrawn) A transmitter comprising four transmit antennas, the transmitter being adapted to implement the method of claim 15.

51. (Withdrawn) At least two base station transceivers collectively comprising four transmit antennas, the at least two base station transceivers adapted to implement the method of claim 11.

52. (Withdrawn) At least two base station transceivers collectively comprising four transmit antennas, the at least two base station transceivers adapted to implement the method of claim 15.

53. (New) The method of claim 2 wherein the first regularly spaced pattern comprises a repeating pattern of two pilot sub- carriers, ten data sub-carriers and the second regularly spaced pattern comprises six data sub-carriers followed by a repeating pattern of two pilot sub-carriers and ten data sub-carriers.

54. (New) The method of claim 1 wherein each block of two sub- carriers by two OFDM symbols is divided into pilot pairs, each pilot pair being transmitted by a respective pair of antennas.

55. (New) The method of claim 54 wherein each pilot pairs is arranged sequentially in time.

56. (New) The method of claim 54 wherein each pilot pair is arranged sequentially in frequency.

57. (New) The method of claim 1 wherein pilots are inserted for the four antennas collectively in blocks of two sub-carriers by two OFDM symbols scattered in time and frequency in a repeating pattern of six OFDM symbols comprising each comprising a first, second and third pair of OFDM symbols, the method comprising:

inserting such blocks of two sub-carriers by two OFDM symbols scattered in a first regularly spaced pattern in each first pair of OFDM symbols;

inserting such blocks of two sub-carriers by two OFDM symbols scattered in a second regularly spaced pattern offset from said first regularly spaced pattern in each second pair of OFDM symbols; and

inserting such blocks of two sub-carriers by two OFDM symbols scattered in a third regularly spaced pattern offset from said second regularly spaced pattern in each third pair of OFDM symbols.

58. (New) The method of claim 1 wherein pilots are inserted for the four antennas collectively in blocks of two sub-carriers by two OFDM symbols scattered in time and frequency in a repeating pattern of OFDM symbols that is a multiple of two OFDM symbols in length.

59. (New) The method of any claim 1 further comprising:

transmitting pilots with a power higher than average power.

60. (New) The method of claim 59 wherein data and pilots are transmitted using QPSK, with the pilots being transmitted with a relative power boost.

61. (New) The method of claim 59 wherein data is transmitted using a QAM constellation, and pilots are transmitted using QPSK with signal constellation points at corners of the QAM constellation.

62. (New) The method of claim 1 further comprising:

transmitting relatively reliable signalling channel information proximal in time and frequency to locations of pilots.

63. (New) The method of claim 62 wherein transmitting relatively reliable signalling channel information proximal in time and frequency to locations of pilots comprises:

for pairs of antennas of the four antennas, transmitting space time coded signalling channel information pairs adjacent in time to pairs of pilots.

64. (New) The method of claim 1 wherein for a given, antenna, a spacing between pilots in the time direction is determined with consideration to the maximum Doppler frequency, while a spacing between pilot in the frequency direction is determined with consideration to a delay spread of multi-path fading.

65. (New) The method of claim 1 wherein antennas can be turned off and pilot groups assigned to the turned off antennas re-assigned to the remaining two transmit antennas to improve the channel estimation performance for fast frequency selective fading channel.

66. (New) The method of claim 1 wherein the four transmit antennas form part of a single base station transceiver.

67. (New) The method of claim 1 wherein the four transmit antennas form part of multiple base station transceivers.

68. (New) The method of claim 1 wherein the four transmit antennas form part of multiple mobile stations.

69. (New) The method of claim 1 wherein the pilots are space-time coded.

70. (New) The method of claim 1 wherein the pilots are space-frequency coded.

71. (New) The method of claim 1 wherein the pilots are space-time-frequency coded.

72. (New) The method of claim 1 wherein the pilots are uncoded.

73. (New) At least two mobile stations collectively comprising four transmit antennas, the at least two mobile stations adapted to implement the method of claim 1.